approach

AUGUST 1977 THE NAVAL AVIATION SAFETY REVIEW

VF-43 adversaries provide ACM services on deployment as well as around Oceana.

"Ripper 2 from 1, the bogey's 280 at 5 miles, 15,000, he'll be coming down my port side."

"Ripper 2, roger."

"Ripper 1, tally-ho at my 11, level. Migs! Migs! He's passing down my port side now!"

"Ripper 2, rog, tally-ho. I'll stay high."

"Roger, I'm engaged. OK, I'm extending east. Can you get in for the shot?"

"Roger, I'm free. I'll be in for the shot in 10 seconds. Tally and a visual."

"Roger 2, tally, no visual . . . Switch! Switch!"

"Roger, switch. Tally, visual. Pitch back starboard. I'm crossing your six. Check your 4 o'clock level."

"Roger, visual, tally. Unload to the south if you can."

"Roger, I'll take him southwest."

"Roger, don't arc. I'm in for the shot . . . good tone . . . Fox 2! Knock it off."

VF-43:
East Coast adversaries

By Richard P. Shipman
APPROACH Writer

THIS dialogue is not an excerpt from tapes of a MIG kill during the Vietnam War – but it could have been. The engagement was, in fact, one of many realistic ACM training flights flown every day off the coast of Virginia and North Carolina to hone the skills of east coast fighter crews to a combat edge. VF-43, flying A-4s, T-38s, and F-5s, provides the "adversary" aircraft and pilots to accomplish this important training.

Early experience in the Vietnam War proved the necessity of maintaining basic ACM skills. To improve Navy aircrew efficiency in this area, an elite adversary training squadron, Top Gun, was formed at NAS Miramar. The improved kill ratio of Navy pilots following establishment of Top Gun proved the validity and effectiveness of an adversary program. But because Top Gun does not offer day to day recurrent training for entire squadrons and is located on the west coast, the need for an east coast adversary squadron became apparent. VF-43 was available and willing.

The VF-43 adversary role began by teaching defensive combat maneuvering to A-7/A-6 pilots. VF-43 was – and still is – an instrument training squadron for initial and recurrent instrument qualification. The adversary program was established as a collateral function. Today, the increased emphasis on the adversary mission has resulted in specialization of mission for the ACM instructors (except CO and XO).

Realistic squadron training is the name of the game for VF-43 adversaries. Unlike Top Gun, which trains one or two crews from a squadron who then return to pass their knowledge on to their squadron, the VF-43 concept involves entire squadrons. The basic syllabus is 3 weeks long, encompassing theory and practice of ACM, involving various aircraft numbers and types. Included in the training are 18 hours of ground school. Ideally, every squadron in an air wing would undergo the adversary training course once during its turnaround cycle.

"Instruction, learning, and ACM exposure in a safe environment is what we're all about," says LCDR Charlie Brun, VF-43 Operations Officer. "Our syllabus is structured in a 'building block' style, starting out with basic theory and maneuvers and progressing to 1 versus many exercises and squadron COMPEX (competitive exercise) if so desired. The beauty of our syllabus is that everyone in the squadron

goes through it. We can structure our training for each individual's experience and ability level."

An important aspect of the training program is the ACMR (air combat maneuvering range). This range has extensive and sophisticated equipment that records all flight parameters and aircraft maneuvers during an engagement. This is extremely valuable for postflight analysis and debriefs. The range is located off the coast of North Carolina and is the second of its type in existence. The first is located in Yuma, AZ, and was described in the MAY '75 APPROACH. Between the range and cassette tape recordings of voice calls during the encounters, the debriefs of aerial engagements have come a long way from the waving hands and loud voices of past years.

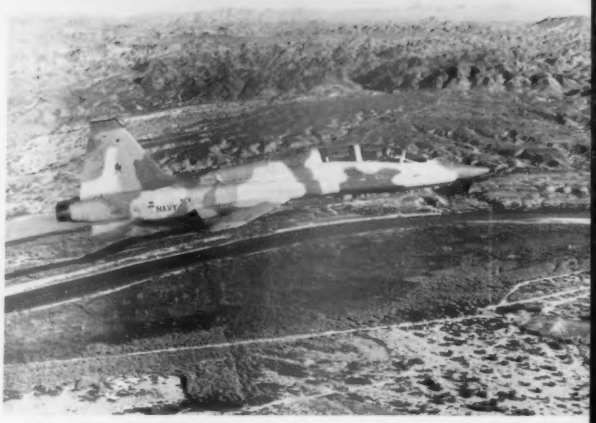
To accomplish its adversary mission, VF-43 has several types of aircraft. To simulate a small, maneuverable subsonic fighter, the A-4 (E or F) is used. The A-4 was originally the only adversary aircraft available, but it failed to duplicate the performance of later model foreign aircraft equipped with afterburners and capable of supersonic speed. Thus the T-38 and later the F-5 were added to the adversary inventory.

The T-38 is used as an adversary instructor trainer and for occasional engagements, but the squadron's F-5s are the heart of the inventory. Small, maneuverable, powerful, and difficult to see, the *Tiger* is an ideal adversary aircraft to simulate late model foreign fighters. It is equipped with maneuvering flaps and has more thrust and fuel reserve than the T-38. It can also be equipped with the pods necessary to tie in with the ACMR. The squadron is presently borrowing the T-38s from the Air Force and hopes to exchange them for two-seat versions of the F-5 in upcoming years.

Squadron pilots were asked how the F-5 performed against the F-4s and F-14s it encounters in the adversary program. "Very well," commented LT Dan Gabriel. "Its small size and the camouflage paint job make it a real bear to see, and if you can't see your opponent, you're not gonna beat him. Learning to pick up a hard-to-see, fast moving opponent is excellent training for the type of situations the fighter pilot is most likely to encounter in any future wars."

Several of the instructors were asked to comment on the capabilities of the Navy's new F-14 compared with the older F-4. "There's really no comparison" says LT Mike Curtin. "The F-4 is pretty much limited to the vertical, so if you can get him into a turning fight, he's yours. The F-14, however, has the power to go vertical *and* can turn with you by sweeping those wings. It's really a tough fighter."

Since there are only a limited number of T-38s and F-5s in the Navy's inventory, establishment of supply lines and maintenance capability would not be efficient. Thus a core



The squadron T-38s will be phased out as the two-seat F-5Fs become available.

of about 30 civilian technicians from Northrop Aircraft maintain the eight T-38s and F-5s assigned to VF-43. Although this is an unusual situation, it has worked extremely well. The aircraft enjoy high availability (about 90 percent), a tribute to the experience and efficiency of the civilian workers. Undoubtedly a factor in the success of this concept has been VF-43's acceptance and integration of the civilians into the squadron.

As important as the aircraft are, the adversary pilots are the key to the effectiveness of the training program. Contrary to what some people might believe, the pilots of the adversary aircraft have to do much more than just mix it up and get to their opponent's six. LT Rick Owens, one of the experienced instructors, sums it up. "The instructors assigned here have to be outstanding pilots, of course, but they also have to know how to instruct. We have to make mistakes intentionally once in a while to get across a training point. We have to know how to set up engagements for maximum learning. We have to know how to brief and debrief the engagements. And one of our biggest responsibilities is safety of the flight."

Pilots selected for VF-43 adversaries are carefully screened for airmanship, officer qualities, and instructional ability. The squadron is looking for lieutenants coming off their first sea duty tour, with F-14-experienced pilots particularly in demand just now. Once the pilots have orders to the squadron, they go through an extensive IUT syllabus before they assume instructional duties. The typical sequence starts out with familiarization in the TA-4, followed by T-38 transition, A-4E/F checkout, and finally, F-5 qualification. Four different syllabi exist, one for each phase, and the phases are completed in entirety before the instructor moves on to another phase. The entire IUT syllabus encompasses about 48 hours of flight time plus ground school. Aircraft systems training is accomplished for the A-4 at various training command bases, while a series of videotapes is used for the T-38 and F-5. The end result is a

fully qualified instructor.

To the casual observer, dissimilar ACM between high performance aircraft operating at the limits of their envelopes might appear unusually hazardous. The excellent safety record VF-43 has enjoyed demonstrates that dissimilar ACM is not inherently dangerous when the risks are identified and positively countered. The emphasis is on safety throughout the adversary syllabus. Some of the steps taken by the squadron to conduct their unique mission with a minimum of risk include:

- Intensive and extensive briefs and debriefs.
- Well defined rules of engagement that are inviolate.
- Monitoring by the range officer at the ACMR console.
- Close control of the engagements by the instructors.

Although all these factors are important, none is more so than the rules of engagement. Briefed on every hop, the rules of engagement provide hard and fast laws that govern conduct of the flight. Minimum altitudes during engagements, weather minimums, cloud deck clearance, radio/ICS procedures and disengagement criteria are all specifically spelled out. These rules are hard and fast; violations are grounds for terminating the mission.

Although the instructor pilot has overall responsibility for safety of the flight, VF-43 emphasizes that collision avoidance is both aircraft's responsibility. For example, the up-sun aircraft – regardless of who is piloting it – has the responsibility for collision avoidance since the down-sun pilot is very likely to be blinded by the sun. Similarly, there is specific action required of each aircraft in various potentially dangerous situations. In a vertical closing situation, the nose-high aircraft goes high. In a horizontal closing situation, both aircraft give way to the right. With aircraft closing at 1000 miles an hour or maneuvering at their maximum angle-of-attack, there can be no time for hesitation or uncertainty about what action to take if a collision possibility appears.

All briefs are terminated by a thorough discussion of spin/departure procedures. Fighter pilots know all too well that if they are not intimately familiar with spin/departure procedures, they will have little chance to recover from the highly disorienting and often violent gyrations associated with a fully developed spin.

Interestingly, safety records invariably improve the more ACM training is conducted. As LCDR Bob Brich, former safety and ACM phase training officer puts it, "Continued exposure to the air combat maneuvering environment is vital in promoting safe aggressiveness. Not only do fighter pilot skills increase as a result of intensive ACM exposure, but accident potential decreases as familiarity in operating at the aircraft's limit is gained. Realistic, intensive training in a controlled environment is the safest and most effective way to ensure combat readiness when it is needed."

VF-43 is doing its share to ensure east coast fighter pilots are ready. ◄

Slick-wing A-4Es and A-4Fs provide small, subsonic opposition.

AIR BREAKS

Watch Yourself! The copilot of an H-3 hollered: "Someone, help me! Get him off!" A strange and frightening event had just taken place.

The crew was flying a day cross-country in VMC at 1200 feet. The HAC unstrapped and went aft to the head. When he returned and while attempting to enter his seat, the copilot made a tight, evasive turn to avoid a big bird. The abrupt control movement caused the HAC to lose his balance. He fell against the collective and the copilot's leg, forcing the collective down and the cyclic stick forward and to the right.

The helicopter immediately entered a 20-degree nose-low, 45-degree angle-of-bank autorotation. The negative G force caused the aircraft commander to strike his head on the overhead circuit breaker panel.

The copilot recovered control of the helicopter at 600 feet. The HAC did not lose consciousness but was woozy from the blow on his noggin. He was assisted into the empty left seat by the crew chief. Cockpit integrity was checked OK, but the HAC ordered the copilot to land at a nearby field for an exterior inspection. Fortunately, all passengers were strapped in, and no one was rattled around in the cabin.

After landing, the HAC, who had apparently recovered, and the crew chief conducted a thorough external inspection. There was no visible damage, and the HAC felt well enough to continue to Homeplate. However, enroute the HAC passed out momentarily, but revived without assistance and performed the landing checklist routinely.

The copilot radioed ahead for medical assistance, and upon arrival, the HAC was taken to the dispensary, treated for minor head lacerations, and released.

Abrupt control movement is always possible in any aircraft. It is one main reason for crewmembers to hold on when moving around and for passengers to remain strapped in.

Waited Too Long. Two pilots flying a CH-46 were engaged in a practice shipboard training and logistics mission. After shooting some approaches and landings, they picked up a 3200-pound dummy load to make some VERTREP passes.

The copilot in the left seat made an approach to a hover over the drop spot. He was perpendicular to the ship's heading, port to starboard. He crossed the deck edge with 10 degrees nose-up, in level flight, about 10 feet above the deck.

He entered a hover, began to settle a bit, and then began to back down. The external load hit the deck. One of the crewmen hollered "Up!" several times, and the HAC called "Pickle it!" twice. The crewman thought the HAC was telling the copilot to pick it up.

The helicopter continued to back down and dragged the load into the safety net. The HAC finally took control, rocked forward, maintained collective, and the helo climbed a bit vertically, which pulled the load free.

The crewman then realized that he had been told to pickle it and jettisoned the load after the helicopter had stabilized in a 50-foot hover, about 15-20 feet off the port quarter. Splash!

When one reviews the evidence, it's easy to see how this incident could have been avoided. The HAC didn't take control soon enough; the copilot didn't anticipate power requirements, nor did he maintain a stable hover; the crewman misunderstood the command to pickle the load.

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All H-46 pilots need to remember that timely application of power is necessary to prevent settling after a flare. HACs must be prepared to ride the controls or assume control when an uncomfortable situation is developing.

H-46 aircrews do not have a standard voice call to pickle a load. The endorser of the incident proposes using "Jettison," which is an easily identifiable word.

Crass and Dumb. The pilot of a P-3 taxied the aircraft onto the duty runway and began a takeoff. As the *Orion* accelerated through 85 knots, the pilots saw a yellow tractor, pulling a cart, approach the runway from the port side at a midfield intersection.

The tractor driver, with his head up and locked, blinders on, and ears plugged, slowed momentarily, then continued out onto the runway in front of the aircraft.

The pilot retarded the power levers, reversed all four props, jumped on the binders, and aborted the takeoff. The copilot informed the tower and requested clearance to taxi back for another takeoff.

The tractor driver was pulling a hydraulic test stand. He had recently arrived at the station as part of a replacement group. He said he stopped short of the runway and read a sign which stated "No vehicle traffic allowed without radio clearance." In spite of this sign, and since he had no radio, he waved to the tower and expected to receive a green light to cross the runway. Then, to top this unbelievable performance, he proceeded without any light to cross the runway. He said he saw the P-3 but didn't think it would be affected by his crossing at midfield.

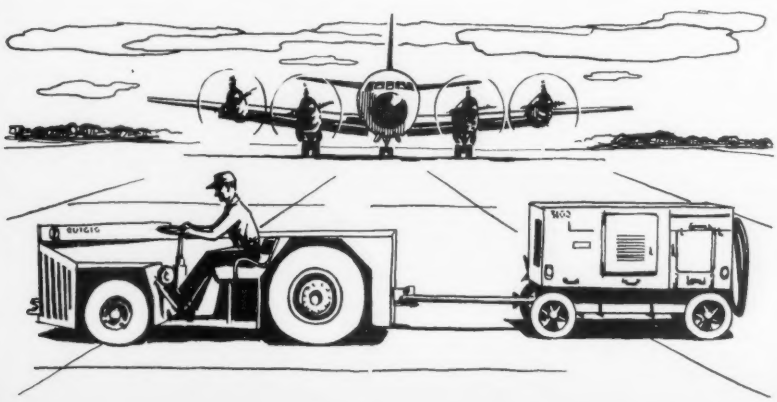
A near-certain catastrophe was averted by the heads-up reaction of the PPC. What other example would any pilot need to keep his head out of the cockpit during aircraft operations?

There are a whole host of unanswered questions which one could ask about this flagrant Mickey Mouse, but the report didn't go into any details. Station ASOs and AMOs, could this happen at your field?

It Almost Cost an Airplane. The night carrier landing environment presents many hazards and pitfalls, even when everything is working normally. Add a few equipment failures and procedural shortcomings, and you have the proverbial accident just waiting to happen. It almost happened to an A-6 recently.

The *Intruder* was part of a two-plane flight returning from a night bombing hop. Approaching the ship, one A-6 discovered it had a weak and intermittent receiver, so the two aircraft marshaled as a section for the Case III night approach. At 10 nm and 1200 feet, the section was dirtied up and given an S-turn for separation from a KA-6 3 nm ahead. No other transmissions were received until 4 nm, at which point the section had closed to 1½ nm from the KA-6. The KA-6 was then directed to wave off its approach to the starboard. Meanwhile, the section was at 2½ nm, still at 1200 feet. The first transmission to the section from CCA was "Well above glidepath." At 2 nm, the section was still well above. At 1½ nm, the LSO called to ask which aircraft was NORDO. The lead aircraft told the wingman's side number and approximate fuel state, then broke away slowly to the left. Because of the "well above glidepath" calls, the section had a high (1000 fpm) rate of descent at 1 nm. To compound the sink rate, the wingman dropped his right wing for lineup while detaching. He also reduced power, since he had heard the "well above glidepath" calls and felt he was still high. Upon transition to the ball, all the wingman saw were waveoff lights. His altitude was approximately 50-100 feet in the groove at ½ nm. Twelve seconds had elapsed from the last "well above glidepath" call to the waveoff. The section was joined again, and another approach was made with the wingman making a normal landing.

There were a multitude of contributing causes to this incident. The KA-6 that was waved off questioned the controller's intentions since he was almost low state. This took up valuable radio time at a critical point in the section approach when the *Intruders* should have started their descent. Also, the lead aircraft didn't give a well defined detachment signal to the wingman, resulting in a 3- to 4-second delay in detachment. This, plus the poor setup, almost cost an airplane and a crew. Abnormal situations call for abnormal awareness and cautiousness. ◄



Some thoughts for

IN the past few months, there has been an increase in the instances of apparent poor judgment and NATOPS violations by those in positions of authority. The following are recent Anymouse submissions in which individuals took advantage of their respective positions to exhibit the type of judgment that they would, no doubt, find unacceptable in junior personnel.

• One winter day, a four-engine turboprop took off with several dignitaries onboard. Along on the flight giving the tour was a senior officer (ISIC), the squadron CO, and the squadron standardization officer. The purpose of the flight was to give the dignitaries a firsthand look at the capabilities of the aircraft.

That day, some flagrant violations of safety and NATOPS occurred. On three separate occasions during the flight, there were *six* extra people in the flight station besides the pilot, copilot, and flight engineer for takeoffs and landings. On top of that, the pilot making the takeoffs and landings was non-NATOPS qualified. Three landings were made with approach flaps vice land flaps. The weather conditions were far less than ideal – slush and water on the runways with a moderate crosswind. The last landing of the day was made into Homeplate with heavy rain, the ceiling at 500 feet, 1 mile visibility, from a night IFR approach.

What would have been the consequences if there had been a malfunction that called for a high-speed abort or a malfunction on landing with the increased landing speed and the poor runway conditions?

There was only one main interest that day, and that was to impress the dignitaries even though it meant jeopardizing the safety of all onboard. In my opinion, the flight showed the capabilities of the aircraft to them, and it showed them just how unprofessional we really are. The flight could have been flown in a much safer manner with the same effect.

Another incident that day was the falsification of a Form DD 365F, "Weight and Balance Form." On this flight, the flight engineer completed a DD 365F showing nine people in the cockpit for takeoff, and was then ordered by the standardization officer to complete a false one showing only three people in the flight station, to be handed over the side. In my opinion, this type of incident destroys the validity of the NATOPS program.

What has happened to the NATOPS program? Is NATOPS just for juniors? In the last few months on all the VIP flights, there has been some type of NATOPS violation. For example, the VIPs have flown without proper flight gear – no Mae West or LPA, no flight suit, and no safety flight boots. Even though these are just small violations, they do add up. Where does it stop – after a crew is lost along with a multimillion dollar aircraft?

When this problem was presented to the squadron ASO, his answer was, "It's just another one of those calculated risks we take every day."

• A flight of two SH-2Fs was planned to carry some VIPs to USS BOAT to observe the sea trials of another helo. The game plan called for four qualified HACs to go along for refresher training in ship quals during the trials – two would sign for the aircraft, and two would ride as passengers to enable the CO and a desk-bound O-6 friend from a local staff to get some stick time. (The CO had 85 hours in type – 15 in the last 7 months – and the background of the captain was in H-3s.)

The CO briefed all four pilots on expected procedures at the ship, but left prior to the planned formation briefing. Both aircraft departed to pick up the VIPs at an outlying helo pad, and the pilot swap was accomplished with the CO in one aircraft and friend in another. All went as planned

those in authority

during the flight to the ship, but things began to deteriorate on the return leg.

The CO and the captain manned the same aircraft while the two HACs rode in the cabin. Upon reaching flight level, the captain immediately joined on the lead aircraft in a *very tight* left echelon, flying from the left seat. Neither CO (who was observed to have his head in the cockpit on several occasions) nor the captain had flown any formation in the SH-2F before. Both HACs riding as passengers (one of whom is a formation instructor pilot) and those in the other aircraft became understandably nervous and concerned. When the formation IP advised the CO they were too close, the captain remarked, "I've always flown formation in the H-3 with overlapping rotor blades, and this is nothing." The CO did nothing to correct the situation.

This squadron has remained accident-free for more than 4 years and is working towards achieving some significant safety milestones. I cannot understand why two senior officers, who expound repeatedly on their support of safety programs and who would hopefully not accept such blatant exhibitions of poor headwork and violations of safe flying practices in their junior officers, would jeopardize the lives of eight people for a few moments' thrill. Perhaps, contrary to a popular saying, there are a few old, bold pilots still in existence.

• The group executive officer (F-4 pilot) decided that he wanted to obtain his annual flight minimums in the H & MS (Headquarters and Maintenance Squadron) TA-4F. Schedules put him on for a day hop that had an ETR of sunset. The group XO had not yet completed the refresher syllabus in an effort to become NATOPS qualified in the *Skyhawk* and as such was not qualified for night ops.

The schedules officer (who is also a safety officer) had one ear tuned to the brief as the XO was telling the instructor (a junior officer) that they would pit turn into the dark! The schedules officer (even more junior) headed for the brief to squash the idea. The schedules officer told the XO that the syllabus hops would be flown in order, and a night hop was not next in the sequence. It was felt that the XO was not ready for a night hop anyway. A verbal badgering session was then directed at the schedules officer from the XO. The schedules officer figured he had one more ace up his sleeve and called the CO. Alas, the skipper suffered the same verbal abuse, and the *Skyhawk* launched on the unscheduled pit turn. At least this time the senior aviator brought the *Skyhawk* back in the same condition that he received it. The last time the same type shenanigan was pulled by the XO in an F-4, the *Phantom* departed the side of the runway, took out the GCA site, and scared the hell out of the night GCA crew.

There are many regulations placed upon all aviators; most were enacted in the interests of safety. Senior officers are entrusted with the responsibility to promote adherence to these regulations. Yet, by the very nature of the positions that they hold, fewer constraints are placed upon their individual actions. The temptation to abuse the privileges and latitudes afforded by command is always present, but such action is nothing short of a serious lapse in mature judgment that jeopardizes other individuals and equipment. ◄

BIRDS ORGANIZE IN

(A Humorous Expose of a Serious Subject)

By LTJG D. C. Blanton
Naval Safety Center

TODAY, a high official for COMFUDGAC (Commander, Feathered Union of Ducks, Gulls, and Chickens) and COMFAAC (Commander, Federation of All Airborne Critters) reported that due to prolonged grievances, the two organizations would join together in a strike against all manmade flying machines. The official stated that he believed the strike would be "quite lengthy in duration."

In the past, splinter factions from the two groups had engaged in strikes on their own. Now, it appears that a concerted effort will be made to instruct all members in proven methods of effective bird strikes. Extensive class work already has been completed by many of the members. An inside source (identified only as "Deep Beak") informed this reporter that final training included an inflight demonstration by veteran migrators.

As proof of the groups' seriousness, he included a picture of one of their recent strikes. He noted that the difficulty of this particular strike was increased because the pilot of the A-4 had his visor down. Degree of difficulty is determined by the skill required to injure the pilot or cause Alpha damage to the aircraft.

"Deep Beak" volunteered that the timing of this strike would provide the group the greatest element of surprise. He said that many people mistakingly believe that bird strikes occur most often during the migratory season. "Deep Beak" explained that statistics show there is no correlation between time of year and frequency of bird strikes. Apparently, an undetermined but substantial number of bird strikes involve nonmigratory birds.

When questioned about what could be done to avoid this imminent bird strike, "Deep Beak" produced a programmed text entitled "Effective Measures Taken by Intelligent Aviators (Human) to Prevent Bird Strikes." The text apparently had been used by FUDGAC and FAAC in ground school to inform the birds of measures taken by humans to avoid bird strikes. The birds' plan was to counter these measures by changing their own behavior patterns. However, "Deep Beak" stated that this approach had been unsuccessful. Important steps listed in the text and used by humans to avoid bird strikes are:

1. Learn about the bird life in the area where you operate. Then avoid areas and altitudes where birds are known to congregate.

2. When birds are encountered in flight, remember that they will try to avoid aircraft. Many migratory birds will do this by diving. Therefore, avoid flying directly under birds if there is a reasonable alternative. Help birds avoid aircraft by reducing airspeed at low altitude, if practicable. Showing landing lights at night will help also.

3. Some birds have learned to avoid aircraft by predicting the aircraft's flightpath. What's the old fighter pilot saying about "a predictable flightpath being for the birds"? Maybe there's new meaning to that.

4. If you collide with a bird(s) and there is any probability that a bird has been ingested by an engine, consideration should be given to landing at the nearest suitable airport. Statistics show that there is a good chance of foreign object damage when birds are hit.

STRIKE

5. Operate with your helmet visor down at all times (use clear visor for night). If you have a dual visor helmet, put both visors down. This can be an important factor in preventing serious injury in case of a midair with a bird.

6. Recognize that bird strikes occur most often during takeoff and landing. Keep a good lookout and be certain to report birds – on and about the airport – to the tower. Also, when applicable, report flocks of birds to the controlling FAA agency so that others may be warned.

This first meeting with "Deep Beak" then abruptly ended. He stated that he already had said too much. I did get him to agree to another meeting if conditions permitted. I honestly don't know who "Deep Beak" was. The only clue I have to his identity was the monogram on his shirt – J.L.S. ◄

A score of 3.65 was awarded a veteran instructor on his strike of this A-4's windscreen (photo, below).

Degree of difficulty in achieving a successful strike is significantly increased when helmet visors are down (photo, left).

Bird Strike Update

(A Fleet Report on the Current Efforts of FUDGAC and FAAC)

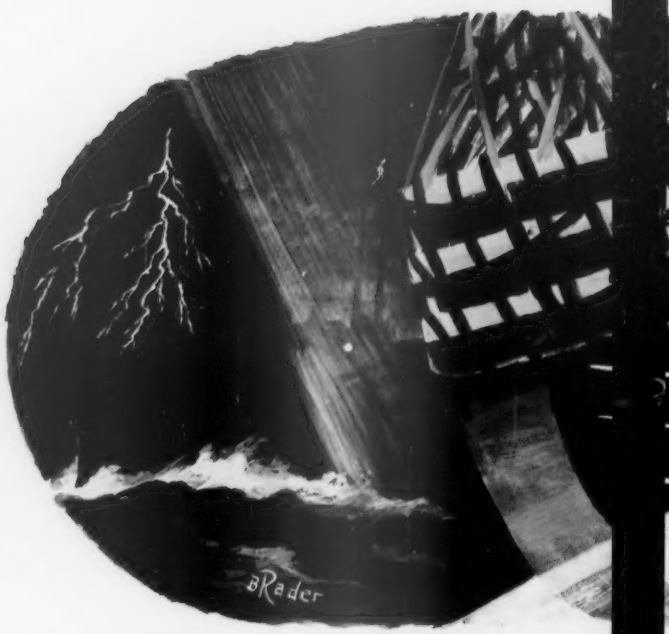
By LT D. P. Alleman
Assistant Safety Officer
VP-46

WITH summer weather comes increased opportunity for VMC flying. Unfortunately, birds are also taking advantage of the great flying weather. Good ole Mother Nature has camouflaged them well. They are small, and their speed is hard to judge, and when you are looking out for other airplanes, it's hard to spot a bird (and vice versa). About the only thing you can do after receiving a bird strike is what the aircrew did in the following situation.

The weather was VMC as the P-3 took off on an instrument departure. As the wheels left the deck, several birds suddenly appeared in front of the aircraft. No evasive action could be taken. One of the birds struck the left wing just outboard of the No. 1 engine. The damage did not appear to be serious as viewed from the cockpit through the prop arc. The aircraft handled normally in all respects; however, the pilot in command elected to return to Homebase for an overweight landing. Closer investigation revealed the damage as shown.

It makes good sense to call it a day, just as the crew did in the incident described above. The problem is that unless the turkey comes through the windscreen, you can't always tell how much damage has been done. Bird strikes are going to occur. The only thing you can do is react safely and hedge your bets by following the suggestions mentioned previously. You have nothing to lose but time; time you can ill afford not to spend.

VERTREP VERTIGO



ONE winter night, the crew of a CH-46 was tasked to transfer four external loads between two ships. The sea was rough, there was a low overcast with light rain, and visibility was about 6 miles. The two ships were abeam each other, 500 yards apart.

Pilots and crewmen that night expressed considerable apprehension about flying in existing weather conditions. One crew had returned early due to a malfunction in the copilot's attitude indicator. The returning pilots both reported they had suffered mild disorientation. They briefed the departing crew on weather conditions and their experience with disorientation. They recommended not launching their relief. The relief crew discussed delaying the lift until the following morning. However, the ships' schedules precluded the postponement.

The copilot of the relief crew took off and made a pedal turn to the right, into the wind, to make the first pickup. The load was hooked, and transition to forward flight was begun. The copilot had the receiving ship in sight and climbed to 200 feet at 50 knots.

Approaching the receiving ship, the pilot took control but felt he was improperly positioned – too high and too close to the drop zone – and he felt that the red deck floodlights were too bright. He decided not to try to salvage that approach, and started to waveoff in a right, climbing turn.

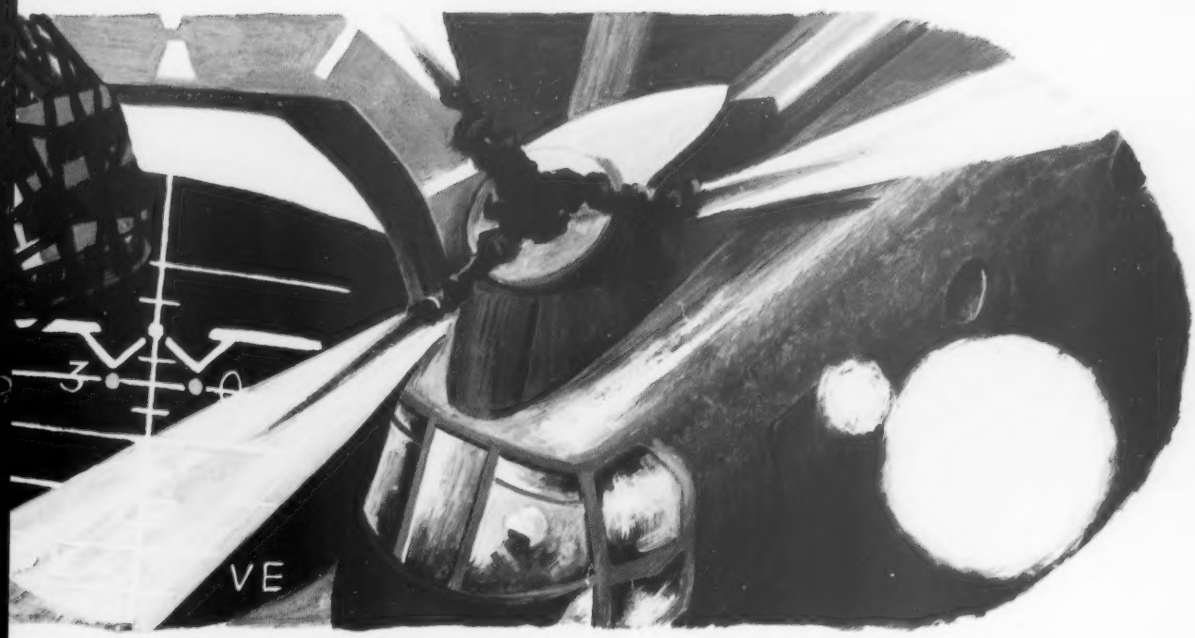
During the climb, his airspeed began to decrease, and the copilot hollered "Watch your airspeed!" The pilot felt disoriented and told the copilot to take control. The copilot kept the turn going but stopped the climb. The altimeter read 600 feet, and the airspeed was 20 knots. The pilot glanced at the gages and then turned his head to the right to try to pick up the ships visually. He saw the green nav light reflecting off the rotor blades and felt he was falling nosedown and to the right. He grabbed the seatpan and supported himself against the window to counteract the extreme vertigo. Then he shifted his head and his scan back to the gages to regain some equilibrium.

This was a classic situation and setting for pilot vertigo. The waveoff involved a climbing, right turn and a transition from contact to instrument flight. The combination of no external references, the two-axis change of aircraft attitude, and head movement quickly brought on disorientation. The copilot was on the gages and wasn't affected. He was prepared to assume control and took over.

The copilot lowered the nose of the helicopter to pick up some airspeed and continued the turn. The pilot saw the attitude indicator and misinterpreted a slight nosedown attitude for 20-25 degrees nosedown. He cautioned the copilot about what he thought was excessive nosedown, and when the copilot didn't respond to his caution, the pilot pulled the cyclic back. The nose popped up, further aggravating the pilot's disorientation, and induced mild disorientation in the copilot.

At this point, no one was sure who had control of the helicopter. Both pilots stated they were aware of control inputs by the other. An order to jettison the load was given, and it was released.

The copilot stopped the turn, and the pilot sighted the ship which they had departed. The pilot took positive control of the helicopter and began a descent. Visual contact consisted of red floodlights only, because prestaged cargo blocked out the lineup lights. The nose of the helo fluctuated, and airspeed varied to as low as zero. The pilot interpreted his position by his view of the ship to be too close and high. He continued the descent. The copilot remained on the gages and called off altitudes every 25 feet. The copilot thought the pilot was making an approach to the ship and later stated he didn't try to pick up the ship



visually.

The copilot's disorientation had been mild because of the multiple control inputs, but did not continue since he maintained his instrument scan. He did not assume control of the helo during the final descent due to his confidence in the pilot, his lack of knowledge about the exact location of the ship, and his previous mild disorientation. His reluctance to take control also can be attributed to a previous discussion with another aircraft commander about a copilot taking control of an aircraft in critical areas of flight. The copilot limited himself to applying slight control pressures.

The pilot lost sight of the ship passing through 150 feet. A second or two later, he glanced at his altimeter, saw he was below 100 feet descending, and pulled power and aft cyclic. The helicopter came to a momentary hover and then impacted the water.

They hit tail-first, pitched violently forward, rolled inverted, and water filled the helo. Some of the crew escaped; some did not.

The crash occurred about a mile astern of the ship. The ship immediately wheeled into a Williamson turn and returned to the crash area. The sea was too rough to launch a motor whaleboat, and the survivors were not recovered until an hour and a half later.

Investigation revealed that both pilots were NATOPS qualified and both held standard instrument ratings. They were current in night flying, but the majority of their night time was "pink." Prior to launch, the pilot did not conduct a formal crew briefing, despite the red flag raised about existing weather conditions by the returning crew. They didn't discuss what type of approach would be used and where the ships would be positioned. Standard cockpit procedures (whatever they are) were to be used, and nothing pertinent was reemphasized. The lack of crew briefing was attributed to their familiarity and to the high frequency of flights with each other.

The mishap board made many recommendations:

- Prohibit prestaged cargo to block lineup lights during night VERTREP.
- Stress the importance of formal cockpit briefs.
- Insist that ships have helo rescue capability.
- Push for vitally needed flight simulators in view of reduced training time for flightcrews.
- Install glide slope indicators and extended lineup lights for all level one, class one certified ships.
- Accelerate the evaluation of Device 9D5, the universal helicopter underwater escape trainer.
- Strengthen seat retention and crew restraining devices in the CH-46.
- Push the development of helicopter emergency escape hatch lighting.
- Develop a night SAR capability for the CH-46. ◄

Airfield profiles: Number 2 of a series

NAS Alameda

CALIFORNIA scenery, sourdough bread, and the Golden Gate Bridge are but three of the attractions that make a cross-country trip to NAS Alameda not all work. However, these same attractions have made the San Francisco Bay area one of the highest density air traffic areas in the U.S. As one air traffic controller suggested, any article on flying into the Bay area should be prefaced with the warning: "Caution – Flying into the Bay area may be hazardous to your health!"

The hazards can be minimized, though, by planning your flight carefully and arming yourself with some advance knowledge of what to expect on your flight to San Francisco and NAS Alameda. Specifically, the following areas warrant discussion.

A midair can ruin your whole trip. The San Francisco TCA (terminal control area) includes no less than 10 airports. Add the several airports just outside the TCA, and you have some of the most congested air traffic in the U.S. The busiest airports are SFO (San Francisco International), Oakland International, and Hayward, a general aviation field that is a leader in the U.S. in total operations for its type. The two naval air stations, Alameda and Moffett, add to the variety and number of aircraft that operate within the "Golden Triangle." SFO alone has an average 450 *scheduled* flights during any 24-hour period. Obviously, this high density of air traffic presents a significant midair hazard.

Traffic routing. To cope with the high volume of traffic, Bay TRACON (terminal radar control) has established specific routes and procedures for arrival and departure traffic. TRACON follows two plans for routing traffic: the Northwest Plan and the Southeast Plan. Which plan is used depends on what the duty runway is at the largest and most active airport in the area – San Francisco International. Therefore, the duty runway at Alameda and all the airports in the area will be determined by the runway in use at SFO.

Whichever traffic plan is in effect, expect to get an enroute descent to a PAR or a visual approach. The high TACAN approach ties up too much airspace, so you shouldn't expect to use it except in an emergency or during an unusually slack time. What's more, traffic density does not allow multiple practice instrument approaches. Alameda has no approach control of its own, so any missed approach traffic must go back through Bay TRACON for sequencing and routing. Therefore, if your mission is instrument training, don't plan practice approaches here.

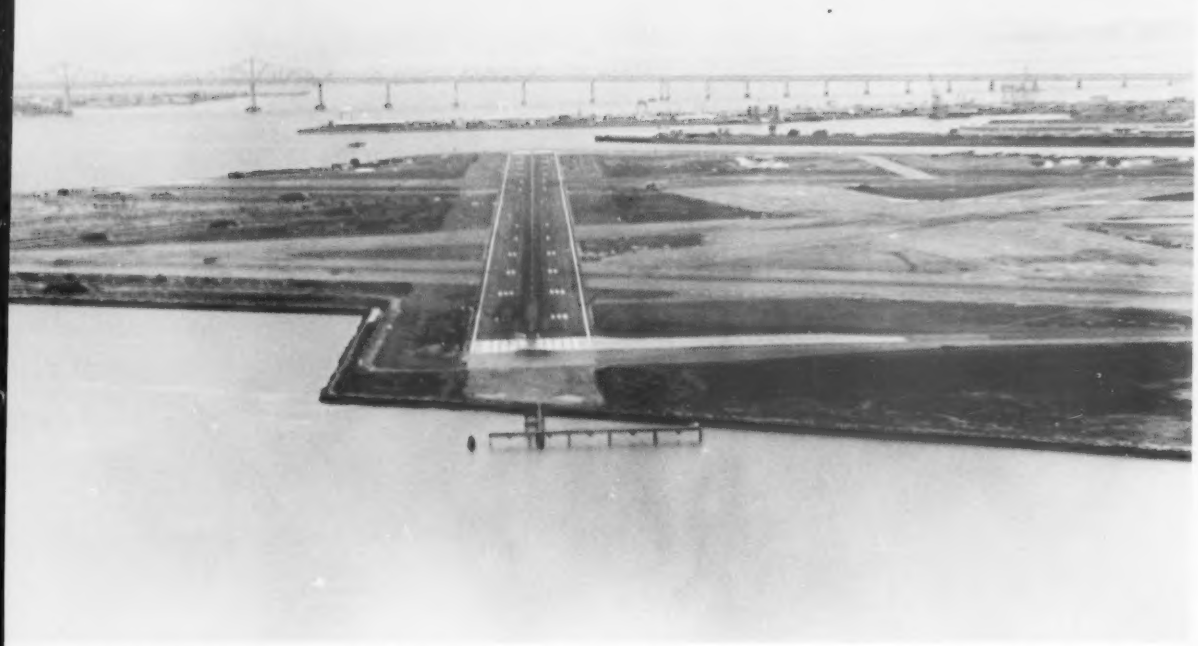
On your enroute descent from the south or east, you will be vectored toward the Bay for Runway 31 or northwestward for Runways 25 and 13. Runway 31 is the preferred and most used runway at Alameda. CAUTION: Runway 29 at Oakland International sits about 5 miles south of Alameda, in line with Runway 31 of NAS. More than one Navy aircraft has made an approach there by mistake (and a few have landed!).

With 31 in use, TRACON will vector you over the Bay to a straight-in approach. Because SFO dictates the active runway, you will often experience tailwind/crosswind conditions coming in on this runway. Alameda Ops will accept up to 10 knots of nonfavoring wind before they start requesting a traffic plan change from Bay TRACON. If weather conditions permit, the pilot can request a circling approach once he is within the Alameda airport traffic area.

The greatest midair threat occurs when Runway 25 is in use at Alameda. When this is the case, aircraft are vectored toward the northwest in an area of the TCA that has a floor of 4500 feet. What this means is that all the private planes making their way north must be below 4500 feet, compressing all this VFR traffic into the same area and altitudes that you are being vectored. Need we emphasize the need for an extra good lookout doctrine during this approach?

The Southeast Plan provides an extremely picturesque approach to Runway 13 at Alameda, but it also has some associated hazards. Since Runway 13 is only about 1½ miles from the Oakland Bay Bridge (elevation 266 MSL), the GCA glide slope is steeper than normal (3.5 degrees). (You can tell how close you are to the bridge by the increased pitch of the controller's "below glide slope" calls.)

Oakland International control zone boundary is only 3.2 miles from NAS Alameda, and when the S.E. Plan is in effect, aircraft inbound to Runway 11 at Oakland pass



Runway 31 is the primary runway at NAS Alameda. Ship traffic at both ends of the runway plus the Oakland Bay Bridge pose unique hazards for air operations.

Runway 25 approaches at NAS Alameda demand caution from transient pilots.

directly overhead Alameda at 1500 feet. Bay TRACON can and does cut it so close that aircraft can be on final to Oakland International and Alameda at the same time. If you have to shoot a missed approach, better check your 12 o'clock high, as there might very well be a jumbo coinciding with your flightpath. The same thing applies on a transition to the VFR circling pattern. Tower will usually assign 500-700 feet downwind in these cases to provide a little extra clearance.

Runway 25 problems. The additional midair potential mentioned earlier is but one of the special hazards of Runway 25. Noise abatement is a big issue at Alameda, just like everywhere in the U.S. today, and the Runway 25 approach comes right over downtown Oakland. As part of the noise abatement procedures, TRACON holds aircraft at 2700 feet until handoff to GCA at about 9 miles on final. To compound this, the glide slope is set up at 3.5 degrees to provide additional clearance over the ship masts and cranes at the Todd Shipyard, just short of Runway 25 threshold. In recognition of potential hazards on this approach, the decision height is set at 400 feet.

Even with these problems, a straight-in approach is far preferred to a circling approach to Runway 25. Noise sensitivities require the tower to read a spiel to a pilot breaking overhead to "Maintain 1500 feet until the J-shaped island, turn in at Webster Street, maintain 800 feet until turning final, attempt to line up initially on the estuary," and so on. If you think it's complicated to read, try to figure it out while you're in the break! The moral: shoot a straight-in approach if at all possible.

Once you finally get on deck, you have a little over 7000 feet of runway, but the first 2000 feet are not visible from the tower. Thus, the tower controllers cannot give landing clearance with another aircraft in position for takeoff until they see it 2000 feet into its roll. This also removes one set of eyes from the hold-short end of the runway.

Finally, afterburner takeoffs are not permitted on Runway 25. This is not, as you might expect, due to noise abatement but because the afterburner vibrations have been causing the ceiling of the nearby gym to fall into the swimming pool. Whatever the reason, if 7000 feet in basic engine makes for a marginal takeoff, you'd better rethink your takeoff.

Ground operations. Transient parking is on the mat slightly north and in front of the tower. Taxi to the parking area via the off-duty runway. As at most bases, aircraft maintenance is extremely limited on weekends.

PPRs are required except for official business (with orders). JP-4 is not available at all.

Special considerations. Pilots going into Alameda should be aware of the following special considerations:

- Runway 7 is not available except for VFR landings off a circling approach. Takeoffs are not allowed.
- A wind shear usually exists at the approach end of Runway 13.
- The Oakland Bay Bridge, 1.5 miles from the departure end of Runway 31, requires aircraft to have a climb capability of 350 feet per mile (not per minute). The SID contains a handy conversion to feet per minute according to speed.
- SIDs are mandatory departing Alameda.
- Ship traffic going into the carrier piers and the estuary for Todd Shipyard pose obstruction hazards at the 31 approach and 13 approach ends, respectively.
- Extensive takeoff clearance delays can be expected on Runway 13 departures.
- The Alameda airport traffic area extends up to 2000 feet AGL instead of 3000 feet AGL.
- TRACON *is serious* about a maximum of 250 KIAS below 10,000 feet.

Miscellaneous. BOQ and BEQ billeting are strictly first-come, first-serve. No reservations are available for transient pilots. Friday and Saturday are particularly busy due to Reserve drilling, and transients arriving these days should make provisions for other lodging.

The BOQ serves meals daily except for Sunday dinner. The O'Club is within walking distance of the BOQ and serves food Wednesday through Sunday. Beyond this, only the bowling alley serves food after normal hours. The air terminal will provide off-base transportation for aircrews who arrive on base after normal meal hours.

Concentrating on the hazards associated with this high-density area may have given a distorted picture of a flight into Alameda. The Bay area controllers are a topnotch bunch, and usually, the flight in is routine, efficient, and picturesque. Be aware of the special problems of Alameda, keep your head on a swivel, comply concisely with the controller's instructions – and enjoy your sourdough bread. ◄

If people learn from their mistakes, we know a few fellows who are getting a fantastic education.

Ace L.

Bravo Zulu

Capt R. D. Clarke
VMAT-203

THE *Harrier* pilot has a full workload, particularly during the vertical takeoff and landing phase. Any aircraft malfunctions or abnormalities that occur during this critical phase require immediate, proper action to avoid serious difficulties. Capt R. D. Clarke of VMAT-203 encountered such a situation recently, and only his outstanding airmanship prevented the loss of a TAV-8A.

The sortie was a VSTOL familiarization flight. The instructor, Capt Clark, was in the rear cockpit, and the student pilot was in the front. The aircraft had taken off with full internal and external fuel, and had burned down to 2200 pounds per side before commencing some practice landings. The TAV-8A has a total fuel-indicating system, and the pilot cannot determine by gage readings whether the fuel indicated is internal or external.

During subsequent practice of slow landings, rolling vertical takeoffs, and short takeoffs, a slight wing drop was noted by the IP, but he attributed it to the replacement pilot's technique. Once VTO (vertical takeoff) capability was reached, the *Harrier* was taxied to the VTO takeoff position.

The aircraft was configured with two 120-gallon external droptanks and had 800 pounds of fuel indicated on each side plus 40 gallons of water for a gross weight of 16,200 pounds. A vertical takeoff was commenced with water (for thrust augmentation) selected and flowing. As the aircraft broke ground, it simultaneously commenced a right roll, right yaw, and right slip, which was countered by left aileron and left rudder. Capt Clarke took control and applied full left aileron and neutralized the rudders to obtain maximum bleed air for lateral control. A maximum angle-of-bank of 45 degrees right wing down was reached as the aircraft was climbing through approximately 35 feet and had yawed approximately 90 degrees to the right. The aircraft continued to yaw/slip to the right for another 270 degrees while climbing to an altitude of 200 feet. During this turn, the angle-of-bank was slowly reduced to wings level as the aircraft steadied on the original heading. Capt Clarke transitioned to wingborne flight and executed an uneventful rolling vertical landing.

Investigation revealed 500 pounds of fuel remaining in the right droptank. Reason for the slow transfer rate was found to be an air leak around the standpipe. Without an internal/external fuel-sensing gage, the pilot had no way of knowing that fuel was still in his droptank.

Capt Clarke is commended for his aggressive handling of this emergency. His presence of mind in neutralizing rudders to provide maximum bleed air for roll control is probably the act which saved the aircraft. Bravo Zulu.

The SAR needs help!

THE SAR helicopter, an HH-46 assigned to MCAS Kaneohe, was out on a local training flight. Capt M. J. Verbarendse was the pilot, and his crew consisted of Cpl J. L. Novaco, crew chief, and Cpl J. F. Steele, SAR swimmer. The pilot had been shooting touch-and-go landings, and then departed the pattern for a flight around the bay.

About 10 minutes later, Capt Verbarendse received a call from the tower and was told to proceed immediately to search for a swimmer. The swimmer was in trouble off the north beach of Kaneohe. After a short search, the SAR crew spotted the swimmer floating motionless, facedown in the surf.

Capt Verbarendse entered a 50-foot hover and was getting ready to put Cpl Steele in the water. However, the aircraft was encountering excessive spray and reduced visibility caused by heavy surf and rotor wash. The pilot raised his hover to 75 feet, and they lost sight of the body. Meanwhile, the crew had decided that the condition of the

surf was too dangerous for a swimmer.

Suddenly, the crew heard an engine decelerating. The pilot alerted the crew to an imminent water landing. Capt Verbarendse kept control of the helicopter and settled gently into the ocean. He saw the No. 1 engine N_f/N_g and torque all reading zero, and the No. 1 engine firewarning light illuminate. He asked the men to check for smoke and flames, and Cpl Novaco reported white smoke visible through a crack at the edge of the No. 1 engine bay door. The pilot pulled the T-handle and activated the No. 1 engine fire extinguisher. The light went out, and the smoke dissipated.

After taking care of the engine fire, the APP was started. Rotor RPM had dropped to 70 percent. Meanwhile, Cpl Novaco ensured all doors and hatches were closed and verified watertight integrity.

The helicopter entered the water beyond the breaking surf, and Capt Verbarendse concentrated on keeping the aircraft level. He activated the emergency throttle, but was unable to beep No. 2 into the emergency throttle governing range. The engine went to topping power and maximum beep, but the emergency throttle wouldn't operate.

Capt Verbarendse turned toward the beach initially and considered taxiing to the beach. However, he realized the 10-foot waves would turn him every way but loose, and he decided to taxi parallel to the beach toward a light surf area. While taxiing, Cpl Novaco and Cpl Steele began to jettison all loose gear to lighten the helicopter. The pilot taxied around Pyramid Rock Point to try to get into the sheltered waters of Kaneohe Bay.

The pilot realized that it was taking increasing collective to taxi, his turns were down to 64 percent, and the crew reported water coming up through the floorboards. So the pilot elected to ground the helicopter on a coral reef about 150 yards off the north end of old Runway 36. When grounded, the good engine was shut down and the rotor brake was applied. They abandoned the aircraft in a seven-man liferaft and paddled ashore.

Capt Verbarendse had attempted a single-engine takeoff but knew he couldn't make it. The helicopter didn't have single-engine capability due to a heavy fuel load, and there wasn't any way they could have jettisoned the internal fuel tank. They weren't about to lower the ramp and flood the cabin.

Kudos to the crew for their good work in saving the aircraft. Had they abandoned the aircraft earlier or attempted to taxi ashore in the heavy surf, the helicopter undoubtedly would have incurred strike damage, and personnel injury would have been likely.

Epilogue. Salvage operations began as soon as the helicopter entered the water. Boats were launched to render assistance, and a decision was made to salvage the helicopter before dark and before high tide (about 4 hours after dark). The rotor blades were removed and floated ashore by maintenance personnel. The internal fuel tank was removed along with all other removable items, and the HH-46 was rigged for hoisting. A CH-53 flew in to do the hoisting and, after one unsuccessful attempt, made it the second time. The HH-46 was lowered to the ramp, and the long task of disassembling the helo to treat it for saltwater immersion began. ◄

A safer way to eject at

By Elizabeth Babcock
Special Writing Projects Branch
Naval Weapons Center
China Lake, CA

AS more safety equipment has been included in military aircraft, the air crash fatality rate should have gone down. But it hasn't. Despite all the safety improvements made in recent years, this fatality rate has remained essentially constant over the last 15 years.

An important cause of this shocking statistic is the increase in out-of-envelope ejections under a combination of low altitude/adverse aircraft attitude situations. In such cases, the ejection seat, a device perfected for safety, may be unable to function due to its design limitations. During calendar year 1974, for instance, 53 percent of Navy ejections initiated under 100 feet (30 meters) AGL and 37 percent initiated under 500 feet (150 meters) AGL resulted in fatalities. Without radical changes in ejection seat design to extend this envelope, these statistics will almost certainly worsen with increasing use of V/STOL aircraft.

low altitudes

"The ejection system functioned as it should," stated a recent accident report. "Unfortunately, it was activated out of its envelope. This accident as well as one which followed it 2 days later are graphic examples of the need for a vertical-seeking ejection seat. The research and development in this area must continue and, hopefully, receive more emphasis."

In a promising application of missile technology, the Naval Weapons Center, China Lake, CA is testing a system using thrust vector control with a gimbaled rocket motor and microprocessor sensing system for a seat steering control system that will select a vertical-up trajectory irrespective of aircraft attitude at the point of ejection. Managed by the Naval Air Development Center, Warminster, PA and funded by the Naval Air Systems Command (340B), this system is being developed as part of the Navy's maximum performance escape system, a system that will also incorporate numerous other advances now under development by the Naval Air Development Center.

In the past, attempts to enlarge the escape envelope resulted in improvements for given sets of conditions at the expense of performance under other equally realistic conditions. One approach to the problem has attempted to select a rocket motor size that produces a trade-off between the need for high trajectory during ejection in wings-level, high sink rate conditions, and the desire to give the seat minimum acceleration toward the ground when ejection occurs in inverted flight conditions. A second approach has reduced the time from initiation of ejection to main parachute inflation. Yet a third approach has worked on pitch stabilization. The new vertical-seeking concept for ejection seat steering does not require the designer to compromise performance under one set of conditions in order to improve it under other conditions. And dangerous, fast-opening parachutes or precise drogue chute/main parachute timing will no longer be necessary.

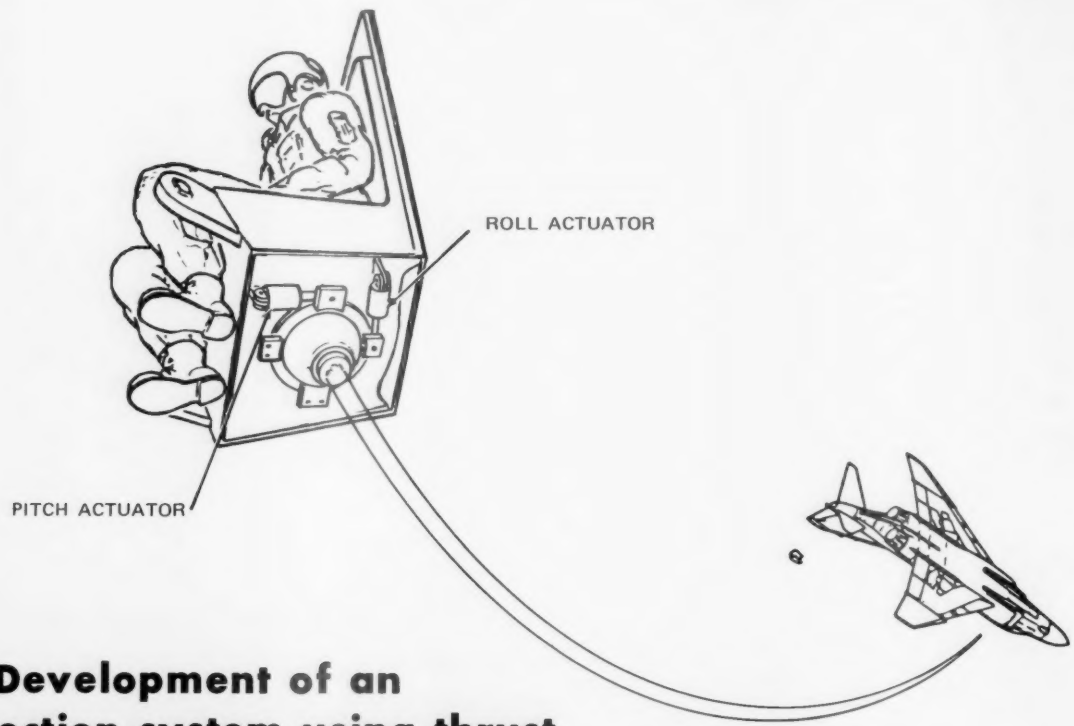
This new system will provide more safety for the aviator by directing his seat for a safe distance up and away from the aircraft when he must abandon it at low altitude. Now in the exploratory development phase, the system has shown promise during computer simulations of allowing safe egress during ejection from a fully inverted aircraft at altitudes as low as 50 feet (15 meters) AGL. By comparison, a currently operational seat ejection system has an escape envelope extending down to approximately 500 feet (150 meters) AGL when the aircraft is inverted.

The critical element in developing a fully automatic vertical-seeking seat ejection system is a vertical reference, an independent and reliable way of sensing the seat's position with respect to the ground. Possibilities that Naval Weapons Center engineers have considered include use of the earth's electrostatic field, MICRAD (microwave radiometry), laser gyros, the aircraft automatic heading reference system, and several electromechanical gyro systems.

The system presently under development at China Lake incorporates a strapdown rate-sensing package for vertical reference. Although this system is dependent on the aircraft avionics for initialization, it has the capability of further development into a fully independent vertical-seeking

system. Components of the system include microcomputer, three-axis strapdown rate gyro sensor system, gimbaled underseat rocket motor, hydraulic actuators, servo valves, hydraulic power supply, and electrical power supply. Position signals from the sensors are fed to the microcomputer, which provides the appropriate commands to the gimbaled rocket motor. This motor, in turn, provides steering forces to bring the seat to an upright attitude. All necessary timing or sequencing functions are performed by the microprocessor.

Since the new system will correct the seat attitude to vertical regardless of attitude at time of ejection, and since one requirement is to propel the seat in a roll maneuver for a sufficient distance to clear the aircraft before the seat corrects to a vertical attitude, new propulsion requirements needed to be calculated. A series of idealized thrust/time profiles having progressive, regressive, boost/sustain, sustain/boost, and constant thrust were established. Minimum turnaround distance during ejection from an



Development of an ejection system using thrust vector control to steer the ejection seat always upward would significantly increase the envelope for inverted ejections.

inverted aircraft was used for selection of a thrust/time curve. Once this curve was selected, a spherical motor was designed to deliver the approximate thrust/time profile. It was also determined that thrust vector control angles of approximately plus or minus 20 degrees will be required to accomplish the vertical-seeking maneuver and, at the same time, control aerodynamic pitch moments. The system's gimbaled rocket motor is capable of accomplishing these angles.

The system should enter advanced development during this calendar year; hardware design and fabrication have been completed, and bench tests are being run. Three vertical-seeking flight demonstrations are planned for this fiscal year. The first took place in June 1977 and was a 0-0 test; the seat was fired vertically from the deck in order to allow Naval Weapons Center engineers to evaluate pitch and roll parameters under this condition. The next test, occurring soon, will be a more difficult trial of this concept. The seat will be fired from a tower in a 90-degree roll attitude and will be expected to right itself. Finally, the third test, scheduled to be conducted in the fall of 1977, will require the seat to make a 180-degree roll to a vertical-up flightpath.

The ideal ejection reference system would not be tied in to any aircraft's system since this system is subject to failure, particularly in conjunction with other aircraft failures that required the ejection. Therefore, one concept that appears to have potential for successful application as a vertical reference external to the aircraft may be investigated at a future time. This promising attitude reference system would use MICRAD to sense radiation from the earth and to feed it into a logic circuit which would then feed corrective signals to the rocket motor servo system. Since proper microwave operating frequency always registers sky radiometric temperatures as lower than earth radiometric temperatures, MICRAD would allow the seat system to reliably sense its own attitude in relation to the ground. Preliminary studies indicated that the MICRAD concept has potential for further development. As a step in this development, it is planned to piggyback a MICRAD-sensing system on the tests described above.

The Navy constantly looks for better approaches to aircraft crew safety. As education and training are employed to combat human failure, new uses for defense technology are found to improve mechanical safety features. In an important application of the latter approach, the vertical-seeking ejection seat will provide an effective way to decrease out-of-envelope ejection fatalities. ◄

HALT! Who rolls there?

LT Dan Peterson, assigned to VR-51, NAS Glenview, was on his first flight as a C-118B aircraft commander when he experienced an inflight emergency which turned one of those routine missions into a real heart-thumper.

After completing a touch-and-go landing from a PAR approach to Grissom AFB, the crew was informed by the tower that their aircraft had lost a wheel at liftoff. The errant wheel, after departing the aircraft, rolled down the field, crossed a ditch, and jumped the security fence surrounding an alert aircraft compound. Whether the tire was properly challenged by the sentry on duty was not noted, but he did place the runaway tire under protective custody until the proper authorities arrived.

When informed of the problem, the gear had already been retracted, and after considering his options, LT Peterson elected to return to Homebase. Upon arrival at NAS Glenview, a low pass was made so the tower could visually inspect the aircraft. The tower confirmed that the port inboard wheel was indeed missing.

An uneventful, super-soft landing was made following the visual confirmation of the problem. Well done, LT Peterson!

Not bad for a rookie.

Investigation of the recovered parts by the Grissom AFB safety officer revealed that the MLG wheel-retaining nut had failed and both retaining locknuts had sheared, allowing the wheel to roll free of the aircraft.

Magnetic particle inspection of the MLG wheel-retaining nuts in all squadron aircraft revealed stress cracks in the area of the castellation slots in 44 percent of those nuts checked. In addition, severe wear and thread separation were found in 50 percent of the retaining nuts in use.

The squadron recommended that all operators of vintage aircraft, such as the C-118B, perform immediate inspections of wheel assemblies to prevent future occurrences of this type incident. ◄

The Air Department:

Unsung heroes of the CV

By CAPT R. Paul Caudill, MC
Flight Surgeon

THE 80,000-ton CV has turned out of the wind. The last jet has shut down, and the angel is on deck. The readyroom movie is just about over. The lights go red in the berthing spaces, and the normal steaming watch is set on the bridge. But, for the Air Department, the work is far from over.

As aircrews and squadron day crews turn in for a well-earned rest, work continues in the catapult and arresting gear spaces. During the hours of flying, the V-2 green shirts were on station, monitoring their arresting gear and catapults and keeping a ready deck. Now that the birds are home, maintenance and repair can begin. In a dozen or more spaces, bare backs and arms are stained with grease, sweat, and dirt. Rags hang out of pockets, and faces shine with oil and sweat. Tending massive engines with quiet skill and efficiency, bodies toil in oppressive heat. Somehow, the ventilation just isn't enough to keep cool.

On the flight deck and in the hangar bays, the ventilation is better, but the work is just as hard. Yellow and blue shirts are busy reshuffling the aircraft from the last recovery. The clanking of chains and chocks intermingles with the shrill blasts of directors' whistles as aircraft are respotted for the morning launch or struck below to the hangar deck for maintenance. Flight ops are over for the pilots when they climb out of their birds after the last recovery – not so for the crews of V-1 and V-3 divisions.

From the flight deck to spaces buried deep within the ship, the purple shirts of V-3 labor along with the rest of the Air Department. Fueling and defueling aircraft, ensuring fuel purity, and maintaining pumping equipment are but a few of the tasks going on into the early morning hours.

There is something about the world of the Air Department readying for another day. Pilots and aircrew should experience and understand that world. It cannot be learned from a cockpit or from the comfort of a readyroom or bunkroom. This learning is important because it gives pilots insight into the forces that control their aircraft while it is on deck. It stimulates questions and promotes understanding. It generates appreciation for the hard-

learned skills and long hours at work. It makes the aviation officer aware of the vast number of men and the almost unbelievable coordination required to get his aircraft into the air.

Pragmatically, the men of the Air Department make the day for the flightcrews. When their future rides on a 3-second trip down the cat or on the tug of a well-tended wire pulling out, ignorance is not bliss. A job not well done, as the old saying goes, can ruin the whole day.

There is little glory in grease, grime, grit, and jet blast. The Air Department knows this well, but they accept it. Their work goes on and on, and if there is no cold cat shot, no crunches, or no contaminated fuel, there are few comments. In port, the ship comes in, and the air wing goes ashore. But, for the Air Department, liberty is like a rich uncle – he just can't be found when he's needed. Cat tracks have to come out for maintenance. Aircraft have to be respotted. Fuel filters need cleaning. But steaming out of the channel, bruised knuckles and greasy nails attest that the ship is fully ready to launch and recover aircraft.

So, to pilots and NFOs, the message is clear. Get out of your flight gear after the last recovery, go find the air bosun or division chief, and tell him you want to learn what goes on. You will learn what really goes on all over the ship, and it will be a good experience. What's more, you can share *your* side of the operation with those ABs who don't really understand what your problems and needs are.

Remember something else. There is an old tradition that parachute riggers get a token of thanks when their chute saves a pilot's life. A cold cat shot or a defective arrestment could be just as terminal as a fouled shroudline. When was the last time you thanked a deuce on the arresting gear engine or a petty officer on the flight deck for doing his usual 4.0 job? Maybe you haven't done it because you don't realize how tough and critical his job really is. Find out. It won't hurt a bit. It will broaden your understanding. It will show the ship's personnel that you care about what they are doing. It will increase a dedicated sailor's pride in his work. Everyone in the ship and the air wing will be better for it – you most of all. ◄

The dirty bingo blues

VERY few bingos are routine. If bad weather, aircraft malfunctions, or other unexpected problems enter into the situation, a bingo can get downright hairy. A perfect example of this occurred recently when an A-7 had to bingo in a dirty configuration. The pilot made it – but just barely.

The aircraft experienced a PC-2 hydraulic failure while leading a NORDO wingman on a night approach to a CV. Using NATOPS procedures, the pilot extended the gear and flaps at 10 miles. After detaching his wingman on the ball, the malfunctioning *Corsair* entered the bolter pattern with 3600 pounds of fuel.

With a PC-2 failure, the A-7 cannot extend its refueling probe for inflight refueling. Therefore, when the pilot boltered on his first pass (hook skip), the decision was made to bingo him to the divert field 112 miles away. Fuel on the bolter was 3300 pounds.

NATOPS dirty bingo specifications (no wind) call for a cruising altitude of 26,500 feet for a bingo of 112 miles. Forecast winds at 16,000 feet were about 25 knots less than at 26,000 feet, so the decision was made to climb to 16,000 feet. Squadron personnel decided that the extra fuel used in the climb and the additional headwind would offset any gain derived from cruising at the higher altitude.

The pucker factor rose perceptibly as the aircraft reached its cruising altitude and found the winds considerably higher than forecast. Wind readout on the very accurate ASN-91 computer registered 60 knots on the nose. Two squadron playmates joined the diverting A-7 at this time and confirmed the wind readout.

To maintain VMC and reduce the headwind component, the flight descended to 13,000 feet and maintained this altitude until starting a descent 15-20 miles from the divert field. Passing 6500 feet, the *Corsair* had 400 pounds remaining. Rolling into the groove, the pilot read 100 pounds. On landing rollout, the engine flamed out.

The pilot attempted to make a field arrestment, but his hook skipped. (Later investigation revealed a failed tailhook shank.) Carefully using the emergency brake, he was able to stop the aircraft with 5000 feet remaining. A tow to the transient line terminated this flight.

This pilot was almost "done in" by the unexpected headwinds. NATOPS figures indicate that an aircraft with 3200 pounds of fuel can climb to optimum altitude of 26,500 feet and reach a bingo field 136 miles away with 800 pounds reserve. These figures are no wind, however. Based on forecast winds, profile flown, and fuel at divert, the bingoed aircraft should have landed with 800 pounds

reserve. The actual winds turned out to be almost twice as strong as the forecast winds, resulting in depletion of the reserve fuel.

When it became apparent to the pilot that the actual winds were going to put him in an *extremis* situation, he jettisoned the two triple ejector racks and the SUU 44 (flare) pod he was carrying. In retrospect, he probably should have dropped them earlier in the profile, but the positive action that he did take 40 miles from destination probably spelled the difference between flameout on the runway and during the approach.

Better wind estimates and more familiarity with A-7 dirty bingo information are needed to prevent future incidents like this. Although forecast winds are generally accurate, the squadrons of this air wing are establishing procedures for obtaining wind readouts from mission aircraft. This data can then be relayed to the ship to supplement the forecast winds.

The A-7E pocket checklist does not contain bingo profile charts for headwind conditions. The involved squadron recommended that all A-7E squadrons examine the effects of wind at different altitudes for dirty bingos. Perhaps preparing a kneeboard card with this information would be useful.

Although not a common occurrence, the dirty bingo can become a real "white knuckler" if it is not anticipated. Factors that necessitate a dirty bingo are pretty much out of the pilot's control, but his ability to handle that dirty bingo is strictly a function of his personal planning and preparation. ◄

GEAR-UP LANDING

A SQUADRON PUI (pilot under instruction) and an IP (instructor pilot) manned their turboprop aircraft for a routine familiarization training flight. Since this was only the first or second flight in the aircraft for the PUI, they remained in the pattern at Homeplate.

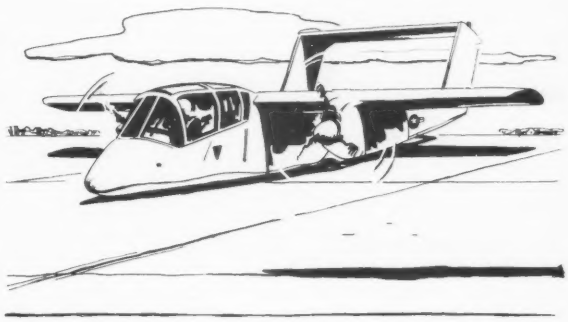
After several approaches and touch-and-go landings, the IP introduced a simulated single-engine touch-and-go. The PUI handled it with ease and momentarily departed the pattern. He then reentered the pattern and performed two no-flap, two half-flap, and another simulated single-engine touch-and-go landing.

The IP was pleased with the performance of the PUI. The IP took control and demonstrated a full-flap landing to a stop and go. Then he demonstrated a half-flap takeoff. After the last demonstration, he told the PUI to raise the gear. While climbing out, he raised the flaps and passed control of the aircraft to the PUI. The PUI was instructed to perform a full-flap touch-and-go.

On downwind, the PUI dumped full flaps and flew an abnormally wide pattern. The IP's attention in the cockpit was distracted by the wide pattern, and he spent considerable time coaching the PUI around. He was leaning into the turn and couldn't see the gear indicators or wheels warning light – nor did he visually check the gear, as required by SOP.

The PUI was distracted by the IP's continuous comments and coaching and did not read the checklist. The IP didn't demand the checklist. Instead, the IP reported "three down and locked" to the tower. He had been making all reports on the previous approaches.

The PUI flew a 5- to 10-knot fast approach all the way around and landed gear-up. The gear-up configuration was seen by the crash crew who attempted to alert the tower on



FM. The tower controller neither heard the crash crew nor did he notice the gear up.

There was only one small difference, in the habit pattern, on the gear-up landing than on all the others. The gear had been left down for all previous approaches. However, no one will ever know why both of them sat there fat, dumb, and happy and violated NATOPS, squadron SOP, and common sense by not dropping the rollers.

Let's look at the inordinate number of omissions, any one of which could have prevented the gear-up landing.

- The PUI didn't call for the checklist.
- The IP didn't demand the checklist.
- Neither pilot visually checked the gear.
- Both pilots failed to notice the warning lights.
- The IP didn't report "two visual, three indicated" to the PUI.
- The tower didn't request a gear report on final.

Aircraft have been landed safely with no one at the controls. They have been landed safely with flaps forgotten, with props in high pitch, with the wrong gas tank selected, but no aircraft has been landed undamaged with the gear up. There's a clue here for all pilots. ◄

"Outstanding headwork, cool, and pilot marrow is what saved this *Knight* from the drink."

Single engine in a hover

THE pilot and crew of a UH-46 were attempting a target drone recovery. Sea state was 5, and the winds were whipping between 25 and 30 knots. The crew had hooked the target drone and were just starting to raise it when the cargo hook inadvertently opened. When the hook released, it left the drone and attached hardware in the water.

The HAC initiated a pedal turn to maintain visual reference with the drone, and that's when the worms began to crawl. As the helicopter turned downwind in a 50-foot hover, both pilots noticed a decrease in No. 1 engine torque and N_f/N_g. The copilot armed the emergency throttle and put out a Mayday transmission.

The HAC began to transition to forward flight and started a gradual turn into the wind. The rotor RPM drooped to 82 percent with accompanying electrical failure, so the copilot cranked up the APP, which restored electrical power. The N_r held at 82 percent and gradually increased as the helicopter came into the wind. Single-engine flight was established, and the No. 1 engine held steady at 70 percent N_g, 90 percent N_f, but zero torque.

The HAC jettisoned fuel and began a single-engine climb to 500 feet. The copilot secured the No. 1 engine and then tried a restart. The attempt was unsuccessful. The HAC continued toward Homeplate at max beep and made a routine landing.

An investigation revealed damage to the inlet guide vanes in the No. 1 engine. A camlock was missing from the maintenance davit access cover. The engine inlet screens had been removed for a previous flight (due to icing conditions) and had not been replaced because of broken engine inlet fairing stud receivers.

Two days later, a camlock was found lying on top of the maintenance davit cover where it had popped out. The retention pins had corroded completely away, leaving only the nonskid coating to hold it in place. The nonskid wore away, and the camlock finally was released. Examination of the inlet guide vanes revealed a signature pattern shaped like the fastener. The compressor section was opened, and the same pattern was seen on the first stages. Obviously, No. 1 engine damage resulted from the camlock fastener ingestion.

The activity recommended that if flight without inlet screens is conducted, all fuselage camlock fasteners be inspected for signs of failure – especially those in proximity to the engine intakes.

The HAC, LT Raymond A. Boucree, and his copilot, LT Douglas Jones, did an outstanding job in keeping the helicopter in the air and returning safely to Homeplate. This is the kind of cockpit crew coordination and communication that is exemplary. You both rate a resounding "well done"! ◄

CUT ALONG THIS LINE

APPROACH Reader Survey

APPROACH is conducting a reader survey, and we need your help. We would greatly appreciate it if you would complete and forward this questionnaire to us. Just tear, fold where indicated, and mail. As needed, extra copies of this page may be reproduced and forwarded.

1. RANK/RATE/GRADE (Circle ONE)

A. 0-10/7
B. 0-6/5
C. 0-4/1
D. W-4/1
E. E-9/7
F. E-6/5
G. E-4/3
H. E-2/1
I. CIVILIAN

2. Your background:

A. Jet
B. Turboprop
C. Recip
D. Helo
E. Non-Aircrew
F. Total hours _____

3. How often do you read APPROACH?

A. Every month
B. Frequently
C. Seldom

4. Is the magazine readily available to you?

A. Yes
B. No

5. What is your overall evaluation of APPROACH?

A. Excellent
B. Good
C. Average
D. Bad

6. How effective is APPROACH in furthering aviation safety?

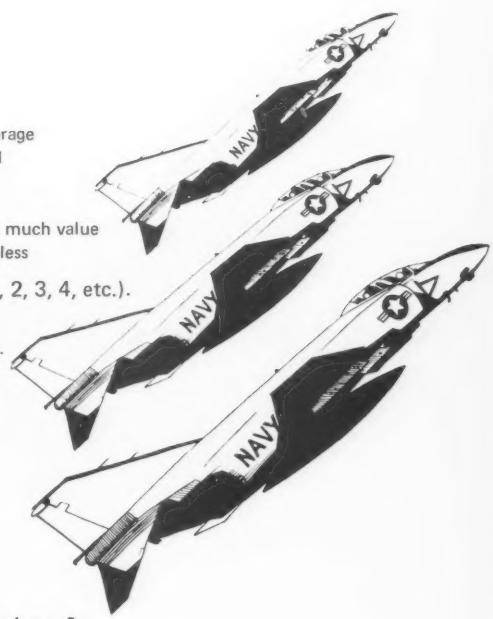
A. Very effective
B. Somewhat useful
C. Not much value
D. Useless

7. Rank the following type of article in order of your preference (1, 2, 3, 4, etc.).

_____ "There I was" narratives.
_____ Technical/hardware developments in aircraft/flight gear/facilities, etc.
_____ Flight physiology/medically related articles.
_____ Safety philosophy – ideas related to safety programs.
_____ Accident/incident writeups.

8. In order of preference, rank the following regular features:

_____ Anymouse
_____ Airbreaks
_____ Bravo Zulu
_____ Letters
_____ Our Readers Respond (special letters related to one specific topic)



9. What general subject areas would you like to see covered in future issues?

10. What suggestions/comments do you have about any aspect of APPROACH Magazine?

11. Do you know how to contribute to APPROACH?

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Comments on "Personality characteristics of the high-accident risk naval aviator"

THIS letter was shown to the author, Dr. R. A. Alkov, and his comments appear in italics at the end of each paragraph.

NAS North Island, CA – After reading "Personality Characteristics of the High-Accident Risk Naval Aviator" by Robert A. Alkov (APPROACH, MAR '77) several times, I felt some kind of response was warranted. At first, I was hesitant to write because I was worried that some flight surgeon or senior aviator might think I was being "defensive" and ground me as a "high-risk aviator." I am not a Ph.D or psychiatrist, but I have 2750 hours and have been NATOPS qualified in the T-33, OV-10, AH-1H, UH-1, T-28, and H-46. I also have extensive time in the TA-4, C-131, S-3, H-3, and spent a year in combat with HAL-3. I'm not stating my flight experience to brag, but to show that I've flown a great variety of aircraft under various situations. Hopefully, this will lend some credibility to my comments.

First, the article disturbed me because the profiles and characteristics of the high-risk aviator are described with the following phrases: "suggests," "may develop," "may prevent," "there is some evidence that," etc. These phrases imply a very subjective evaluation at best. We do not want safety officers and operations officers playing amateur psychiatrist with the pilots in their commands. Pilot evaluations should not be based on the type of car one drives, whether one owns a big motorcycle, is a bachelor, just divorced, or recently bought a large house. Rather, evaluations should be made on demonstrated flight ability, knowledge and adherence to NATOPS, judgment shown while flying, and ability to handle a stressful situation.

Psychology is an inexact science. Psychologists use phrases such as "suggests," etc., because behavior is never 100 percent predictable. I agree with your comments about focusing on only one characteristic; it's the total profile that is significant.

Secondly, the characteristics described are not the only ones of a high-risk aviator. How about the timid, indecisive pilot who barely got through flight school? He is afraid to push his aircraft to the prescribed limits and, consequently, does not know his own limitations. Faced with a stressful situation, he can't cope, often resulting in an accident from making the wrong decision or no decision at all. Pilots, during their training, must be placed in situations where they are forced into decisionmaking while in the air.

This sounds like a high-risk aviator to me. There are several types of high-risk aviators; my article described one type.

Thirdly, I feel that to be "action-oriented and highly conscious of one's flying ability" is a very desirable trait. Carrier pilots should strive to make every pass an OK-3 wire approach. Attack pilots should try to be tops in the bombing derby. And what's wrong with trying to get the most flight time? These traits, coupled with mature judgment and adherence to NATOPS and TACMANS, are the ones we should strive to develop. You won't learn to be a good aviator sitting behind a desk.

I couldn't agree more.

I knew a pilot who was killed in an accident similar to the ones described in the case studies. He was making an authorized low-level computer update during a weapons test. Upon completion of the pass, he banked hard left, and before commencing a pullup, he impacted the ground. The aircraft accident board went into great detail about what they thought was his psychological makeup. The report forgot to mention the most obvious thing – the pilot made a mistake. Couldn't it be that for a couple of precious seconds, his head was inside the cockpit and he became slightly distracted by something he saw? Suicidal, or wishing to inflict self-punishment? I sincerely doubt it. Fallible, we all are, but not suicidal. Whether flying a carrier approach, a low-level night ASW pattern, a VERTREP from a pitching deck, or whatever one's aviation specialty is, these types of evolutions are highly demanding and require constant pilot vigilance. During these evolutions, one is too busy and concentrating too hard to think of personal problems.

When preoccupied with problems, an aviator is sometimes unaware of his reduced ability to cope with stress. A pilot doesn't have to be consciously thinking about his problems.

Finally, the only way to eliminate the risks inherent in aviation would be to ground all our aircraft. The purpose of training and safety programs is to minimize risks and equip the pilot with the information needed to fly his aircraft and complete his mission. There are times when we are asked to take additional risks, such as in combat or search and rescue. It is imperative that our training include as much of the actual conditions to be encountered as possible. The pilot in command must be able to weigh all factors of risk versus gain and mission necessity.

Agree.

Getting back to the article, Dr. Alkov, after discussing the "egocentric perfectionist," states, ". . . many of the characteristics of the high-risk naval aviator are also the characteristics of the best tactical pilots in the Navy." I couldn't agree more. Therefore, we need programs aimed at educating the high-risk aviator. Unfortunately, sometimes it takes an accident by someone held in esteem, or a personal close call to remind pilots of their shortcomings.

We have to differentiate between the mature tactical aviators and those who act out the role of a hot pilot but are immature in judgment.

Constant safety awareness and forums for open, candid discussions are needed. An all-encompassing, realistic training program is mandatory. Excessive and unnecessary restrictions that inhibit the decisionmaking process for aviators should be reversed. Complete operational readiness should be the primary goal, with a good safety record as the most important byproduct. This takes education, training, backing from wing commanders, and money.

Couldn't agree more.

LT I. B. Refo
HC-3

Letters

Air Force and Navy Philosophy

APO, New York – Thank you for a very interesting article on Navy and Air Force operating and safety procedures (APR '77 APPROACH). I spent some time with the "Black Knights" of VF-154 aboard the RANGER enroute to Japan in 1968. Now I've finally read something that expresses what I observed and felt since that time. One great advantage the Navy has is when you leave port, all the unrelated nonsense is thrown overboard, and one lives and breathes flying operations.

I believe that there is a break point between combat capability and safety. The method of computing that point requires a total commitment to combat capability, readiness, and the exact use of the PK (probability of kill) formula. What is the probability that you will kill yourself or the enemy? The most practical, effective way for individuals and squadron groups to push the (safety) equation factors toward one is to improve in-house training – innovative, progressive, and effective ground and air training.

It is a shame that regulations and directives reduce the acceptable level of readiness PK, thereby making the manager's job less challenging, demanding, and responsible.

Keep up the good work. I apologize for the captain having to remain anonymous, although it may be unfair to him to say that. You may use my remarks and my name.

Maj Cornelius Cosentino, USAF
Chief of Safety, 36 TFW

Final Checker on Flight Gear

San Diego, CA – This life-size painting of a properly attired VF-21 aviator and a model squadron aircraft are a final reminder about aviation safety that confronts each VF-21 *Freelancer* prior to man-up. It is designed to make *all* aircrew aware that preflight checks are necessary on personal gear as well as the aircraft. Located in the *Freelancer* lair at NAS Miramar, VF-21 uses this display to represent the overall professional attitude necessary to be safe as well as aggressive. It is this type of squadron-wide participation that enables VF-21 to enjoy the beginning of a second year of accident-free flying. Is your flight gear OK? It might not hurt to check.

CDR R. C. Schroeder
Commanding Officer, VF-21

What Price Safety?

NAS Glenview, IL – Providing sufficient flight gear to properly outfit flightcrews is an expensive project. As improved equipment such as flight helmets, LPAs, jackets, and even underwear become available in the system, the cost of these items continues to rise. The old leather flight jackets were cheap compared to the new improved ones. *Nomex* underwear is now available at $21 per pair. The bill to outfit some VP squadron's flightcrews in underwear alone is $819.

The fundamental question each CO must decide is whether or not his squadron has sufficient funds to properly outfit the crews in the gear available. Is it enough to provide survival gear required by instructions, or should funds be allocated to provide the crews with the extras in survival equipment – extras such as the new *Nomex* underwear and the heavy winter flight suits. It is not an easy question to answer,

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especially since austere funding is the rule rather than the exception.

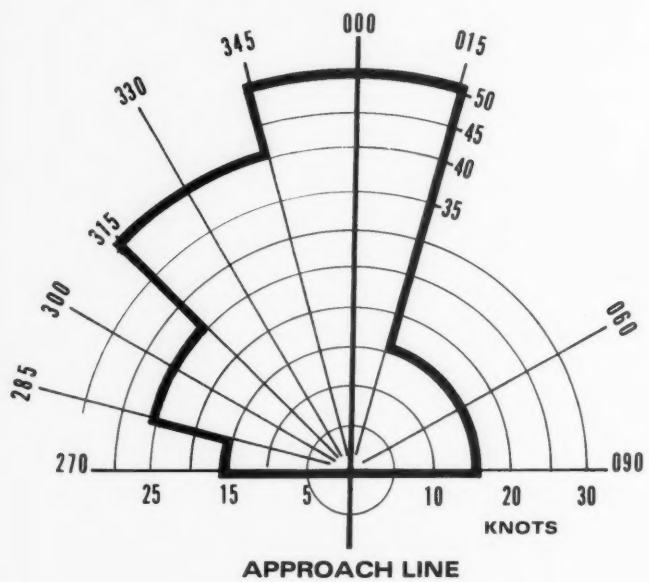
Each squadron's flightcrew varies in size and numbers. For example, the flightcrews of VP squadrons are generally 11-15 crews consisting of 10-12 crewmembers each. The monetary requirements to outfit the aircrews in different squadrons also vary. It is far cheaper to outfit a dozen pilots in an A-7 squadron than it is to outfit 225 aircrewmen in some VP squadrons. Most squadrons cannot afford any of the needed extras in safety clothing under current monetary allotments. Special funds for the initial issue of the majority of this equipment is sorely needed. As the price of our safety programs continues to increase, realistic funding must parallel the rise in costs of the equipment.

Each squadron CO must put aircrew equipment costs in the proper monetary perspective early on to provide for the equipment that he determines to be necessary. This should be done within current fiscal constraints and with the same vigor and dedication that is evident when operational priorities are established. Additional funds to support the Navy's safety program must be forthcoming to allow any CO to operate safely – regardless of the dollar cost. Operating safely to increase combat readiness is, after all, the foundation of our safety program. Does anyone have an easy answer?

LT E. E. Coris
Safety Coordinator, VP-60

Correction

IN the JUN '77 issue of APPROACH in the article, "Tower, say your winds!", the wind envelope depicted in Fig. 2 was in error. The proper envelope is shown below.



Re "Frigate Flight Deck Operations"

NAS North Island – Lieutenant Tierney's article in the APR '77 issue of APPROACH on "Frigate Flight Deck Operations" was both interesting and informative. However, I must take exception to his use of tail tiedown chain runners with rotors engaged. Although the H-2 NATOPS requires the use of tail tiedowns under certain wind conditions, the application or removal of tail tiedowns with rotors engaged is an extremely dangerous evolution at best. NWP 42(b) neatly avoids the question by referring to the exclusive use of "deck tiedowns" (whatever they are) on rotor engagement. Recommendations for a NATOPS change will be forthcoming from the west coast, but meanwhile, we will jealously guard our tail when the rotors are turning.

LT Bryan D. Wiggins
HSL-35 ASO

Re "Generator Failure"

NAS Brunswick – Thanks for printing my letter concerning P-3 generator failure in your June Letters section; however, I'm afraid I goofed! I stated that "The current warning system is constructed to illuminate when a support bearing (*not* the primary or main bearing) fails in the generator . . . " By now I suspect you may have received some letters questioning the above statement, and I too would like to set the record straight. The warning light illuminates when, in fact, the primary or main bearing fails! If the word "not" in the above quote was deleted, the statement would be accurate. Sorry about that!

CAPT R. S. Zeisel, USN
Chief of Staff
Commander, Patrol
Wings, Atlantic

Think how smart we'd be if we retained as much of what we read as of what we ate.

Ace L.

Vol. 23 No. 2 NAVAIR 00-75-510

approach

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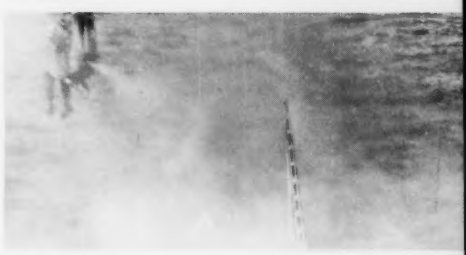

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How not to

THERE'S an old saw which says "Familiarity breeds contempt," or to rephrase it to fit this incident, "Giving non-NATOPS-approved, simulated emergencies doesn't make good sense, even if the pilot has been previously qualified in model."

A C-118 transport aircraft was on the downwind leg in the pattern. The instructor pilot, in the right seat, simulated a failure of the No. 1 engine by reducing power and RPM. The pilot at the controls, who was on his sixth syllabus flight leading to redesignation, maintained speed, dropped the gear at the 180, and set flaps to 30 degrees. He continued the turn toward final in good shape.

About the 90-degree position, the instructor pilot got cute and pulled the power back on No. 2 engine, simulating a second engine failure. *This is a no-no,* but the instructor did it anyway. The pilot at the controls called for gear up, flaps to 20 degrees, and continued the approach. When a landing was assured, he called for gear down, additional flaps, and landed on centerline on the first third of the runway.

The pilot at the controls announced his intentions to reverse No. 3 and No. 4 after touchdown, but apparently it didn't register with the instructor pilot. The aircraft landed on centerline at 100 knots, and control of the yoke was passed to the instructor. The pilot at the controls got on the nose steering wheel and called for reverse. The flight engineer armed the reverse lever, the No. 3 and No. 4 props were pulled into reverse, and power was added to 30 inches.

The flight engineer stated he heard a screeching noise shortly after reverse was initiated. The aircraft veered right and then, as the aircraft slowed down, veered left. The instructor felt nosewheel vibrations and hollered, "Straighten the nosewheel." The pilot at the controls said that it was straight. The instructor then told the pilot to get off the brakes, and he was advised that the pilot wasn't using any brakes. Full control was regained, the pilot at the controls taxied clear of the duty, and they awaited an inspection of the gear and brakes by the crash crew.

There was no smoke or fire or anything visible, and the aircraft was taxied to the line and shut down. Investigation encompassed a look at the runway as well as the aircraft. It was found that the nose tire skid began on centerline, drifted right about 21 feet, then veered back about the same deviation from the centerline on the left side. All skid marks ceased about 5000 feet down the runway. The nosewheel tire was replaced, and the landing gear strut and components were thoroughly inspected.

The instructor violated NATOPS by introducing an unauthorized maneuver. Then he compounded the felony by not briefing the pilot at the controls. Once the decision was made to shoot a two-engine-out landing, the instructor was not equal to the task of staying ahead of the pilot – whose technique left something to be desired.

When the pilot at the controls told the instructor he was going to reverse No. 3 and No. 4, the instructor should have reminded him to follow NATOPS procedures, ensure directional control, reverse No. 3, and then slowly reverse No. 4. The pilot at the controls honked both props into reverse at the same time. (Checkitis?) He knew better, but in doing so, overcorrected with nosewheel steering to stop the drift at fairly high speed.

The pilot at the controls thought perhaps the instructor failed to exert sufficient pressure on the yoke. However, the supposition was thrown out because the nosewheel was in contact with the runway before the yoke was passed to the instructor, and when the props were reversed, an additional downward moment was exerted on the nosewheel.

The message to be reiterated as a result of this incident *for the umpteenth time* is:

- Instructors are never to introduce unauthorized maneuvers.
- Instructors should not introduce emergencies or compound emergencies which have not been thoroughly briefed before the flight.
- There should never be any surprises introduced in the air. The place for that is in the flight simulator, not the aircraft.
- Instructors may not take anything for granted, nor assume that an old head, in the process of requalifying, will not goof.
- Pilots do strange things in syllabus flying and on checks, which they would never do when in command.
- In the real world, there are few emergencies which occur without warning. It usually gives the pilot in command time to get set, talk over "what if," and decide on a course of action. ◄

SAFETY IS PICKING UP!